

Bryan Ford

Department of Computer Science
Yale University
51 Prospect Street
New Haven, CT 06511

Phone: 203-432-1055
Fax: 203-432-0593
E-mail: bryan.ford@yale.edu
Web: <http://www.bford.info/>

Education

Ph.D. Computer Science, Massachusetts Institute of Technology, September 2008
Thesis title: *UIA: A Global Connectivity Architecture for Mobile Personal Devices*

M.Sc. Computer Science, Massachusetts Institute of Technology, September 2002
Thesis title: *Packrat Parsing: a Practical Linear-Time Algorithm with Backtracking*

B.Sc. Computer Science, University of Utah, June 1998, *summa cum laude*

Research Interests

Primary interest: networked computer systems, focusing on operating system design and distributed protocols for mobile personal devices. Secondary interest: programming languages and compilers.

Research Experience

Assistant Professor of Computer Science 2009–present
Department of Computer Science Yale University
Research topics: next-generation Internet architecture, virtualization, cloud computing.

Postdoctoral Researcher in Computer Science 2008–2009
Advisor: Peter Druschel Max Planck Institute for Software Systems
Research focus: next-generation Internet architecture.

Research Assistant in Computer Science 2000–2008
Advisor: M. Frans Kaashoek Massachusetts Institute of Technology
Research topics: naming and networking of personal mobile devices, programming language syntax theory, parsing algorithms, archival storage, and virtual machines.

Undergraduate Research Assistant in Computer Science 1992–1998
Advisor: Jay Lepreau University of Utah
Research topics: microkernels, CPU scheduling, execution models, operating system modularity and component reuse.

Teaching Experience

Teaching Assistant in Computer Science Fall 2003 and Fall 2004
Course: 6.828, *Operating System Engineering* Massachusetts Institute of Technology
Instructor in charge: M. Frans Kaashoek

Teaching Assistant in Computer Science Fall 2002
Course: 6.035, *Computer Language Engineering* Massachusetts Institute of Technology
Instructors in charge: Saman Amarasinghe and Martin C. Rinard

Honors and Awards

Presidential Fellowship, Massachusetts Institute of Technology, 2000.

Bryan Ford

Computing Research Association Outstanding Undergraduate Award, 1995.

Barry M. Goldwater Excellence in Education scholarship, 1994.

Clyde Christensen College of Engineering scholarship, University of Utah, 1991.

Refereed Conference Publications (texts available at <http://www.bford.info/pub.html>)

1. *Vx32: Lightweight User-level Sandboxing on the x86*, Bryan Ford and Russ Cox. USENIX Annual Technical Conference, June 2008. *Awarded Best Student Paper*.
2. *Alpaca: Extensible Authorization for Distributed Services*, Christopher Lesniewski-Laas, Bryan Ford, Jacob Strauss, M. Frans Kaashoek, and Robert Morris. 14th ACM Symposium on Computer and Communications Security (CCS), October 2007.
3. *Structured Streams: a New Transport Abstraction*, Bryan Ford. ACM SIGCOMM, August 2007.
4. *Persistent Personal Names for Globally Connected Mobile Devices*, Bryan Ford, Jacob Strauss, Chris Lesniewski-Laas, Sean Rhea, Frans Kaashoek, and Robert Morris. 7th USENIX Symposium on Operating Systems Design and Implementation (OSDI), November 2006.
5. *VXA: A Virtual Architecture for Durable Compressed Archives*, Bryan Ford. 4th USENIX Conference on File and Storage Technologies (FAST), December 2005.
6. *Peer-to-Peer Communication Across Network Address Translators*, Bryan Ford, Pyda Srisuresh, and Dan Kegel. USENIX Annual Technical Conference, April 2005.
7. *Parsing Expression Grammars: A Recognition-Based Syntactic Foundation*, Bryan Ford. 31st ACM Symposium on Principles of Programming Languages (POPL), January 2004.
8. *Packrat Parsing: Simple, Powerful, Lazy, Linear Time*, Bryan Ford. International Conference on Functional Programming (ICFP), October 2002.
9. *Interface and Execution Models in the Fluke Kernel*, Bryan Ford, Mike Hibler, Jay Lepreau, Roland McGrath, and Patrick Tullmann. USENIX Symposium on Operating Systems Design and Implementation (OSDI), February 1999.
10. *The Flux OSKit: A Substrate for Kernel and Language Research*, Bryan Ford, Godmar Back, Greg Benson, Jay Lepreau, Albert Lin, and Olin Shivers. 16th ACM Symposium on Operating System Principles (SOSP), October 1997.
11. *Flick: A Flexible, Optimizing IDL Compiler*, Eric Eide, Kevin Frei, Bryan Ford, Jay Lepreau, Gary Lindstrom. ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI), June 1997.
12. *Microkernels Meet Recursive Virtual Machines*, Bryan Ford, Mike Hibler, Jay Lepreau, Patrick Tullmann, Godmar Back, and Stephen Clawson. USENIX Symposium on Operating Systems Design and Implementation (OSDI), October 1996.
13. *CPU Inheritance Scheduling*, Bryan Ford and Sai R. Susarla. USENIX Symposium on Operating Systems Design and Implementation (OSDI), October 1996.
14. *Evolving Mach 3.0 to a Migrating Thread Model*, Bryan Ford and Jay Lepreau. USENIX Winter Technical Conference, January 1994.
15. *In-Kernel Servers on Mach 3.0: Implementation and Performance*, Jay Lepreau, Mike Hibler, Bryan Ford, and Jeffrey Law. 3rd USENIX Mach Symposium, April 1993.

Refereed Workshop Publications

16. *An Efficient Cross-Layer Negotiation Protocol*, Bryan Ford and Janardhan Iyengar. 8th Workshop on Hot Topics in Networks (HotNets-VIII), October 2009 (to appear).
17. *Breaking Up the Transport Logjam*, Bryan Ford and Janardhan Iyengar. 7th Workshop on Hot Topics in Networks (HotNets-VII), October 2008.
18. *An Offline Foundation for Online Accountable Pseudonyms*, Bryan Ford and Jacob Strauss. First International Workshop on Social Network Systems, April 2008.
19. *User-Relative Names for Globally Connected Personal Devices*, Bryan Ford, Jacob Strauss, Chris Lesniewski-Laas, Sean Rhea, Frans Kaashoek, and Robert Morris. 5th International Workshop on Peer-to-Peer Systems (IPTPS), February 2006.
20. *Unmanaged Internet Protocol: Taming the Edge Network Management Crisis*, Bryan Ford. 2nd Workshop on Hot Topics in Networks (HotNets-II), November 2003.
21. *The Flux OS Toolkit: Reusable Components for OS Implementation*, Bryan Ford, Jay Lepreau, Steve Clawson, Kevin Van Maren, Bart Robinson, and Jeff Turner. 6th IEEE Workshop on Hot Topics in Operating Systems (HotOS-VI), May 1997.
22. *User-level Checkpointing through Exportable Kernel State*, Patrick Tullmann, Jay Lepreau, Bryan Ford, and Mike Hibler. 5th IEEE International Workshop on Object-Oriented in Operating Systems (IWOOS), October 1996.
23. *The Persistent Relevance of the Local Operating System to Global Applications*, Jay Lepreau, Bryan Ford, and Mike Hibler. 7th ACM SIGOPS European Workshop, September 1996.
24. *Microkernels Should Support Passive Objects*, Bryan Ford and Jay Lepreau. 3rd IEEE International Workshop on Object-Oriented in Operating Systems (IWOOS), December 1993.
25. *FLEX: A Tool for Building Efficient and Flexible Systems*, John B. Carter, Bryan Ford, Mike Hibler, Ravindra Kuramkote, Jeffrey Law, Jay Lepreau, Douglas B. Orr, Leigh Stoller, and Mark Swanson. 4th Workshop on Workstation Operating Systems (WWOS), October 1993.

Internet RFCs

26. *NAT Behavioral Requirements for TCP*, S. Guha, K. Biswas, B. Ford, S. Sivakumar, and P. Srisuresh. RFC 5382, October 2008.
27. *State of Peer-to-Peer (P2P) Communication across Network Address Translators (NATs)*, Pyda Srisuresh, Bryan Ford, and Dan Kegel. RFC 5128, March 2008.

Technical Reports and Other Publications

28. *Directions in Internet Transport Evolution*, Bryan Ford. IETF Journal, Volume 3 Issue 3, December 2007.
29. *Scalable Internet Routing on Topology-Independent Node Identities*, Bryan Ford. Technical Report MIT-LCS-TR-926, October 31, 2003.
30. *Using Annotated Interface Definitions to Optimize RPC*, Bryan Ford, Mike Hibler, and Jay Lepreau. Technical Report UUCS-95-014, March 1995.
31. *Separating Presentation from Interface in RPC and IDLs*, Bryan Ford, Mike Hibler, and Jay Lepreau. Technical Report UUCS-95-018, December 1994.
32. *Notes on Thread Models in Mach 3.0*, Bryan Ford, Mike Hibler, and Jay Lepreau. Technical Report UUCS-93-012, April 1993.

Bryan Ford

Industry Employment

- Nuvoiz Inc. Mountain View, CA
Consultant 2006
Provided design assistance on NAT traversal technology for voice-over-IP communication.
- Phobos Inc. (acquired by SonicWALL in 2000) Salt Lake City, UT
Systems architect 1998–2000
Designed high-speed traffic management hardware/software systems in a networking startup.
- Sleepless Software Salt Lake City, UT
Founder 1993–1998
Developed and marketed entertainment products for MS-DOS, Windows, and Java platforms.
- Open Software Foundation Cambridge, MA
Consultant 1993
Advised on integration of fast RPC and migrating threads into the OSF Mach kernel.
- Hewlett-Packard McMinnville, OR
Software engineer summer 1992
Cardiology Business Unit: wrote database tools for an ECG management system.
- Designing Minds Logan, UT
Consultant 1991–1992
Designed and wrote drivers for high-speed data compression hardware.
- Waterford Institute Provo, UT
Software engineer summers 1989–1991
Created educational curricula and software with a team of teachers and programmers,
- Designing Minds Logan, UT
Consultant 1987–1988
Developed a painting program for bitmapped graphics and animation on the Amiga, titled *Chroma Paint*, published 1988.

Software Artifacts

- 2007 SST: an experimental transport protocol implemented as a C++ library. Released under GPL.
- 2005 UIA: a naming and routing protocol suite for personal mobile devices. Released under GPL.
- 2005 vx32: an application-level virtual machine/sandbox for x86. Released under GPL.
- 2002 Pappy: a packrat parser generator for Haskell. Released under GPL.
- 1999 Fluke: an experimental microkernel operating system. Released under GPL.
- 1998 Flux OSKit: a component library for operating system construction. Released under GPL.
- 1997 Flick: an optimizing Interface Definition Language (IDL) compiler. Released under GPL.
- 1995 Inner Worlds: a side-scrolling action/adventure game. Released as Shareware by Sleepless Software.
- 1993 Migrating Threads: an enhancement to Mach 3.0, later incorporated in OSF Mach and Mac OS X.
- 1989 MultiPlayer: a multi-format music player for Amiga computers. Released as Shareware by author.
- 1988 Chroma Paint: a bitmapped graphics tool for Amiga. Commercially published by Designing Minds.

Service

Program Committees: ROADS '08, ICCCN '09 P2PN, IMC '09, NPSec '09, OSDI '10

Bryan Ford

References

Furnished upon request.